Claims

1   1. A method of obtaining connection to a packet data

2 network comprising:

3   inputting a user request to a first network which

4 requests that the user be authorized for connection to the

5 packet data network through a second network;

6   transmitting from the first network to the second

7 network the user request and an authorization of payment to

8 the second network by the first network for the use by the

9 user of the packet data network;

10   transmitting from the second network to the first

11 network authentication information granting the user

12 authentication to obtain connection through the second

13 network to the packet data network; and

14   transmitting the authentication information from

15 the first network to the user which informs the user that

16 authentication to obtain connection to the packet data

17 network has been obtained.

1   2. A method in accordance with claim 1 wherein:

2   the user request includes a quantification of

3 connectivity which the user requests to the packet data

4 network.

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1   3.   A method in accordance with claim 2 wherein:

2   the quantification comprises at least one service

3 unit with each service unit being encoded with a random

4 number.

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6   4.   A method in accordance with claim 3 wherein:

7   each service unit is encoded with a different

8 random number.

1   5.   A method in accordance with claim 1 wherein:

2   the authentication information comprises a shared

3 key which may be used to create secure communications

4 between the user and the packet data network.

1   6.   A method in accordance with claim 5 wherein:

2   authentication information is a subscriber

3 identification module SIM comprising a number n of service

4 units with each service unit comprising a different random

5 access number uniquely identifying each service unit,

6 a signed response SRES and the shared key Kc.

1   7.   A method in accordance with claim 2 wherein:

2   the authentication information comprises a shared

3 key which may be used to create secure communications

4 between the user and the packet data network.

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1   8.   A method in accordance with claim 7 wherein:

2   authentication information is a subscriber

3 identification module SIM comprising a number n of service

4 units with each service unit comprising a different random

5 access number uniquely identifying each service unit,

6 a signed response SRES and the shared key Kc.

1   9.   A method in accordance with claim 3 wherein:

2   the authentication information comprises a shared

3 key which may be used to create secure communications

4 between the user and the packet data network.

1   10.   A method in accordance with claim 5 wherein:

2   the second network computes a subscriber

3 identification module SIM comprising the number of service

4 units with each service unit comprising a different random

5 access number uniquely identifying each service unit,

6 a signed response and the shared key Kc.

1   11.   A method in accordance with claim 4 wherein:

2   the authentication information comprises a shared

3 key which may be used to create secure communications

4 between the user and the packet data network.

1   12. A method in accordance with claim 11 wherein:

2   authentication information is a subscriber

3 identification module SIM comprising the number of service

4 units with each service comprising a different random access

5 number uniquely identify each service unit, a signed

6 response and the shared key.

1   13. A method in accordance with claim 1 wherein:

2   the inputting of the user request to the first

3 network, the transmitting of the user request and an

4 authorization of payment to the second network, and the

5 transmitting of the authentication information from the

6 second network to the first network and to the user are by

7 secure communications.

1   14. A method in accordance with claim 2 wherein:

2   the inputting of the user request to the first

3 network, the transmitting of the user request and an

4 authorization of payment to the second network, and the

5 transmitting of the authentication information from the

6 second network to the first network and to the user are by

7 secure communications.

1   15. A method in accordance with claim 3 wherein:

2   the inputting of the user request to the first

3 network, the transmitting of the user request and an

4 authorization of payment to the second network, and the

5 transmitting of the authentication information from the

6 second network to the first network and to the user are by

7 secure communications.

1   16. A method in accordance with claim 4 wherein:

2   the inputting of the user request to the first

3 network, the transmitting of the user request and an

4 authorization of payment to the second network, and the

5 transmitting of the authentication information from the

6 second network to the first network and to the user are by

7 secure communications.

1   17. A method in accordance with claim 5 wherein:

2   the inputting of the user request to the first

3 network, the transmitting of the user request and an

4 authorization of payment to the second network, and the

5 transmitting of the authentication information from the

6 second network to the first network and to the user are by

7 secure communications.

1   18.   A method in accordance with claim 3 wherein:

2   after the user is informed that authentication to

3 obtain connection to the packet data network has been

4 obtained, the user transmits to the second network at least

5 one request for consumption of at least one service unit

6 comprising a random number RAND and a signed response SRES;

7   the second network compares the random number RAND

8 and signed response SRES of each request for consumption of

9 at least one service unit received from the user with stored

10 random numbers RAND and signed responses SRES to determine

11 if a match exists; and

12   if a match exists, the second network permits data

13 packets to pass through the second network between the user

14 and the packet network.

1   19.   A method in accordance with claim 18 wherein:

2   the second network debits from a stored value of

3 service units which have been granted to the user a number

4 of consumed service units which are identified in each

5 request for consumption of at least one service unit until

6 the number of consumed service units equals the number of

7 granted service units.

1   20.   A method in accordance with claim 19 wherein:

2   each unused service unit is stored in the second

3 network in a hash table and each used service unit is stored

4 in the second network in a hash table.

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21.   A system comprising:

a user;

a first network which is connectable to the user;

a second network which is connectable to the first

5 network and to the user; and

a packet data network which is connectable to the

second network; and wherein

the first network, in response to a user request

to the first network that the user be authorized for

10 connection to the packet data network through the second

network, transmits to the second network the user request

and an authorization of payment by the first network for the

use by the user of the packet data network, the second

network transmits to the first network authentication

15 information granting the user authentication to obtain

connection through the second network to the packet data

network, and the first network transmits to the user

authentication information which informs the user that

authentication to obtain connection to the packet data

20 network has been obtained.